A.7 Earth station site characteristics

For a specific earth station:

a) The horizon elevation angle in degrees and, in the case of a station submitted in accordance with Appendix **S30A**, the antenna gain in the direction of the horizon for each azimuth around the earth station.

b) The planned minimum angle of elevation of the antenna in the direction of maximum radiation in degrees from the horizontal plane, having due regard to possible inclined-orbit operation of the associated space station.

c) The planned range of operating azimuthal angles for the direction of maximum radiation in degrees, clockwise from True North, having due regard to possible inclined-orbit operation of the associated space station.

d) The altitude (metres) of the antenna above mean sea level.

A.8 The rain climatic zone(s)

A.9 Minimum angle of elevation in the service area in the case of Regions 1 and 3

A.10 Earth station coordination area diagrams

The diagrams shall be drawn to an appropriate scale, indicating, for both transmission and reception, the location of the earth station and its associated coordination areas, or the coordination area related to the service area in which it is intended to operate the mobile earth station.

A.11 Regular hours of operation

A.12 Range of automatic gain control

Range of automatic gain control, expressed in dB.

B. Characteristics to be provided for each satellite antenna beam or each earth or radio astronomy station antenna

B.1 The designation of the satellite antenna beam and, if appropriate, an indication as to whether it is a steerable or reconfigurable antenna beam. The designation shall be a character code, and the last character shall be an "R" for steerable or reconfigurable beams.

B.2 Transmission/Reception indicator

B.3 Geostationary space station antenna characteristics

a) Where it is intended to communicate with an earth station via an antenna pointing in a fixed direction:

1) the maximum isotropic gain (dBi);

2) the antenna gain contours plotted on a map of the Earth's surface, preferably in a radial projection from the satellite onto a plane perpendicular to the axis from the centre of the Earth to the satellite. The space station antenna gain contours shall be drawn as isolines of the isotropic gain, at least for -2, -4, -6, -10 and -20 dB and at 10 dB intervals thereafter, as necessary, relative to the maximum antenna gain, when any of these contours is located either totally or partially anywhere within the limit of visibility of the Earth from the given geostationary satellite. Whenever possible, the gain contours of the space station antenna should also be provided in a numerical format.

b) Where a steerable beam (see No. **S1.191**) is used:

1) the maximum isotropic antenna gain (dBi), if the effective boresight area (see No. **S1.175**) is identical with the global or nearly global service area. The maximum antenna gain is applicable to all points on the Earth's visible surface;

2) the maximum antenna gain and the effective antenna gain contours (see No. **S1.176**), if the effective boresight area (see No. **S1.175**) is less than the global or nearly global service area. These contours shall be provided as defined in B.3.a.2 above.

c) The antenna gain contours of B.3.a.2 and B.3.b.2 above shall include the effect of the planned longitudinal tolerance, inclination excursion and pointing accuracy of the antenna.

d) The pointing accuracy of the antenna.

e) The antenna radiation pattern, where the antenna radiation beam is directed towards another satellite.

f) The gain of the antenna in the direction of those parts of the geostationary-satellite orbit which are not obstructed by the Earth, in the case of operation in a band allocated in the Earth-to-space direction and in the space-to-Earth direction.

g) For the case of a space station submitted in accordance with Appendix **S30**, Appendix **S30A** or Appendix **S30B**:

1) maximum isotropic antenna gain (dBi);

2) shape of the beam (elliptical, circular, or other);

3) for circular beams:

- half-power beamwidth in degrees;
- co-polar and cross-polar radiation patterns;
- nominal intersection of the antenna beam axis with the Earth (boresight longitude and latitude);

4) for elliptical beams:

- co-polar and cross-polar radiation patterns;
- rotational accuracy in degrees;
- major axis orientation in degrees anticlockwise from the Equator;
- major axis (degrees) at the half-power beamwidth;
- minor axis (degrees) at the half-power beamwidth;
- nominal intersection of the antenna beam axis with the Earth (boresight longitude and latitude);

5) for beams of other than circular or elliptical shape:

- co-polar and cross-polar gain contours plotted on a map of the Earth's surface, preferably in a radial projection from the satellite on to a plane perpendicular to the line from the centre of the Earth to the satellite. The isotropic or absolute gain shall be indicated at each contour which corresponds to a decrease in gain of 2, 4, 6, 10 or 20 dB and thereafter at 10 dB intervals down to a value of 0 dB relative to an isotropic radiator. Whenever practicable, a numerical equation or table providing the necessary information to allow the gain contours to be plotted should be provided;
- beam aim point longitude and latitude;
- where a steerable beam (see No. **S1.191**) is used, the maximum antenna gain and the effective antenna gain contours (see No. **S1.176**); these contours shall be provided as defined above.

5bis) for an assignment in the bands 14.5 - 14.8 GHz or 17.7 - 18.1 GHz, the isotropic gain in the direction of those parts of the geostationary-satellite orbit which are not obstructed by the Earth. Use a diagram to show estimated isotropic gain relative to orbit longitude.

6) ΔG (difference between the maximum gain and the gain in the direction of the point in the service area at which the power-flux density is at a minimum) (for Regions 1 and 3 only).

B.4 Non-geostationary space station antenna characteristics

a) The isotropic gain of the antenna in the direction of maximum radiation (dBi) and the antenna radiation pattern.

b) In the case of a space station submitted in accordance with No. **S9.11bis**:

- orientation of the satellite transmitting and receiving antenna beams and their radiation pattern;
- the satellite antenna gain $G(\Theta_e)$ as a function of elevation angle at a fixed point on the Earth;

- the spreading loss (for a non-GSO satellite) as a function of elevation angle (to be determined by equations or provided in graphical format);
- maximum and average beam peak e.i.r.p./4 kHz and e.i.r.p./1 MHz for each beam.

B.5 Earth station antenna characteristics

a) The isotropic gain (dBi) of the antenna in the direction of maximum radiation (see No. **S1.160**).

b) Half-power beamwidth in degrees.

c) Either the measured radiation pattern of the antenna or the reference radiation pattern to be used for coordination.

B.6 Radio astronomy station antenna characteristics

The antenna type and dimensions, effective area and angular coverage in (azimuth and elevation).

C. Characteristics to be provided for each group of frequency assignments for a satellite antenna beam or an earth or radio astronomy station antenna

C.1 Frequency range

The frequency range within which the carriers will be located for each Earth-to-space or space-to-Earth service area, or for each space-to-space relay.

C.2 Assigned frequency (frequencies)

a) The assigned frequency (frequencies), as defined in No. **S1.148**, in kHz up to 28 000 kHz inclusive, in MHz above 28 000 kHz to 10 500 MHz inclusive and in GHz above 10 500 MHz. Alternatively, in the case of a space station submitted in accordance with Appendix **S30**, the channel number.

If the basic characteristics are identical, with the exception of the assigned frequency, a list of frequency assignments may be provided.

b) The centre of the frequency band observed, in kHz up to 28 000 kHz inclusive, in MHz above 28 000 kHz to 10 500 MHz inclusive and in GHz above 10 500 MHz.

C.3 Assigned frequency band

a) The bandwidth of the assigned frequency band in kHz (see No. **S1.147**).

b) The bandwidth of the frequency band in kHz observed by the station.

C.4 Class of station(s) and nature of service

The class of station and nature of service performed, using the symbols shown in the Preface to the International Frequency List.

C.5 Receiving system noise temperature

a) In the case of a space station, the lowest total receiving system noise temperature, in kelvins, referred to the output of the receiving antenna of the space station.

b) In the case of an earth station, the lowest total receiving system noise temperature, in kelvins, referred to the output of the receiving antenna of the earth station under clear-sky conditions. This value shall be indicated for the nominal value of the angle of elevation when the associated transmitting station is onboard a geostationary satellite and, in other cases, for the minimum value of the angle of elevation.

c) In the case of a radio astronomy station, the overall receiving system noise temperature in kelvins, referred to the output of the receiving antenna.

C.6 Polarization

The type of polarization and, if appropriate, sense of polarization of the antenna. In the case of circular polarization, indicate the direction of polarization (see Nos. **S1.154** and **S1.155**). In the case of linear polarization, indicate the angle (in degrees) measured counter-clockwise in a plane normal to the beam axis from the equatorial plane to the electric vector of the waves as seen from the satellite. In the case of a space station submitted in accordance with Appendix **S30** or **S30A**, this indication is to be in the direction of the boresight or the aim point or as defined in B.3g)3), B.3g)4) and B.3g)5), respectively.

C.7 Class of emission, necessary bandwidth and description of the transmission

In accordance with Article **S2** and Appendix **S1**:

a) the class of emission and the necessary bandwidth;

b) the carrier frequency or frequencies of the emission(s);

c) for each carrier the class of emission, necessary bandwidth and description of transmission;

d) for the carrier having the smallest bandwidth of the assignments in the system, the class of emission, necessary bandwidth and a description of the transmission.

C.8 Power characteristics of the transmission

a) The maximum value of the peak envelope power (dBW) and the maximum power density (dB(W/Hz))[1], averaged over the worst 4 kHz band for carriers below 15 GHz, or averaged over the worst 1 MHz band for carriers above 15 GHz, supplied to the input of the antenna for each carrier type.

b) The total peak envelope power (dBW) and the maximum power density (dB(W/Hz))[1] supplied to the input of the antenna, averaged over the worst 4 kHz band for carriers below 15 GHz, or averaged over the worst 1 MHz band for carriers above 15 GHz.

c) The minimum value of the peak envelope power (dBW) and the minimum power density (dB(W/Hz))[1], averaged over the worst 4 kHz band for carriers below 15 GHz, or averaged over the worst 1 MHz band for carriers above 15 GHz, supplied to the input of the antenna for each carrier type.

d) The maximum total peak envelope power (dBW) supplied to the input of the antenna for each contiguous satellite bandwidth and this bandwidth. For a satellite transponder, this corresponds to the maximum saturated peak envelope power and the bandwidth of each transponder.

e) The required carrier-to-noise ratio (dB), considering clear-sky operation, for each carrier type.

f) Nominal equivalent isotropically radiated power(s) (e.i.r.p.) on the beam axis.

g) The maximum aggregate power (dBW) of all carriers (per transponder, if applicable) supplied to the input of the antenna and their aggregate bandwidth. If this corresponds to the bandwidth of a transponder, this shall be indicated.

h) In the case of a space station submitted in accordance with Appendix **S30**:

- the power supplied to the antenna (dBW) (Regions 1 and 3);
- the power supplied to the antenna (dBW) and the maximum power density per Hz (dB(W/Hz)), averaged over the worst 5 MHz, 40 kHz and 4 kHz, supplied to the antenna (Region 2).

[1] The most recent version of Recommendation ITU-R SF.675 should be used to the extent applicable in calculating the maximum power density per Hz.

i) In the case of an earth station submitted in accordance with Appendix **S30A**:

- total transmitting power (dBW) in the assigned frequency band supplied to the input of the antenna;
- for the band 17.3 - 18.1 GHz, the maximum power density per Hz (dB(W/Hz)) supplied to the input of the antenna averaged over the worst 1 MHz band:
- for the band 14.5 - 14.8 GHz, the maximum power density per Hz (dB(W/Hz)) supplied to the input of the antenna averaged over the worst 4 kHz band;
- for the band 17.3 - 17.8 GHz, the maximum power density per Hz (dB(W/Hz)) supplied to the input of the antenna averaged over the total RF bandwidth (24 MHz for Region 2 or 27 MHz for Regions 1 and 3);
- range of power control, expressed in dB, above the transmitting power indicated above (if power control is used).

j) In the case of a space station or an earth station submitted in accordance with Appendix **S30B**:

- the maximum value of power density, in dB(W/Hz), averaged over the necessary bandwidth of the modulated carrier, supplied to the input of the antenna;
- the frequency below which signals whose peak-to-average ratio is less than 5 dB will be located;
- maximum carrier power density, in dB(W/Hz), averaged over the worst 4 kHz band, supplied to the antenna input.

C.9 Information on modulation characteristics

a) For each carrier, according to the nature of the signal modulating the carrier and the type of modulation:

1) in the case of a carrier frequency modulated by a frequency-division multichannel telephony baseband (FDM/FM) or by a signal that can be represented by a multichannel telephony baseband: the lowest and highest frequencies of the baseband and the r.m.s. frequency deviation of the test tone as a function of baseband frequency;

2) in the case of a carrier frequency modulated by a television signal: the standard of the television signal (including, where appropriate, the standard used for colour), the frequency deviation for the reference frequency of the pre-emphasis characteristic and the pre-emphasis characteristic itself as well as, where applicable, the characteristics of the multiplexing of the video signal with the sound signal(s) or other signals;

3) in the case of a carrier phase-shift modulated by a digital signal: the bit rate and the number of phases;

4) in the case of an amplitude modulated carrier (including single sideband): as precisely as possible, the nature of the modulating signal and the kind of amplitude modulation used;

5) for all other types of modulation: such particulars as may be useful for an interference study;

6) for any type of modulation, as applicable: the characteristics of energy dispersal, such as the peak-to-peak frequency deviation (MHz) and the sweep frequency (kHz) of the energy dispersal waveform.

b) In the case of a space station submitted in accordance with Appendix **S30** or the case of a space station submitted in accordance with Appendix **S30A**:

1) type of modulation;

2) pre-emphasis characteristics;

3) TV standard;

4) sound-broadcasting characteristics;

5) frequency deviation;

6) composition of the baseband;

7) type of multiplexing of the video and sound signals;

8) energy dispersal characteristics.

c) In the case of a non-geostationary space station submitted in accordance with No. **S9.11bis**, the type of modulation and multiple access, and spectrum mask.

C.10 Type and identity of the associated station(s)

The associated station may be another space station, a typical earth station of the network or a specific earth station.

a) For an associated space station, its identity.

b) For a specific associated earth station, the identity of the earth station and the geographical coordinates of the antenna site.

c) For an associated earth station (whether specific or typical):

1) the class of station and nature of service performed, using the symbols shown in the Preface to the International Frequency List;

2) the isotropic gain (dBi) of the antenna in the direction of maximum radiation (see No. **S1.160**);

3) the beamwidth in degrees between the half power points (describe in detail if not symmetrical);

4) either the measured radiation pattern of the antenna or the reference radiation pattern;

5) the lowest total receiving system noise temperature, in kelvins, referred to the output of the receiving antenna of the earth station under clear-sky conditions, when the associated station is a receiving earth station;

6) the antenna diameter (metres).

C.11 Service area

a) The service area or areas of the satellite beam on the Earth, when the associated transmitting or receiving stations are earth stations.

b) In the case of a space station submitted in accordance with Appendix **S30A**:

- where the feeder-link earth station is in Region 2, the geographical coordinates of the feeder-link station in the frequency band 17.7 - 17.8 GHz, including the rain climatic zone;
- in all other cases, the feeder-link service area identified by a set of a maximum of ten feeder-link test points, including the rain climatic zone for each test point, and by a service area contour on the surface of the Earth.

c) In the case of a space station submitted in accordance with Appendix **S30** or Appendix **S30B**, the service area identified by a set of a maximum of ten test points and by a service area contour on the surface of the Earth.

d) In the case of a non-geostationary space station submitted in accordance with No. **S9.11bis**, appropriate information required to calculate the affected region due to the MSS space stations (as defined in Recommendation ITU-R M.1187).

C.12 Required protection ratio

The minimum acceptable aggregate carrier-to-interference ratio, if less than 26 dB. The carrier-to-interference ratio is to be expressed in terms of the power averaged over the necessary bandwidth of the modulated wanted and interfering signals, assuming both the desired carrier and interfering signals have equivalent bandwidths and modulation types.

C.13 Class of observations

The class of observations to be taken on the frequency band shown in item C.3.b). Class A observations are those in which the sensitivity of the equipment is not a primary factor. Class B observations are those of such a nature that they can be made only with advanced low-noise receivers using the best techniques.

C.14 Type of reception

Type of reception (individual or community) in the case of a space station in Regions 1 and 3 submitted in accordance with Appendix **S30**.

D. Overall link characteristics

To be provided only when simple frequency-changing transponders are used on the space station onboard a geostationary satellite.

D.1 Connection between Earth-to-space and space-to-Earth frequencies in the network

The connection between uplink and downlink frequency assignments in each transponder for each intended combination of receiving and transmitting beams.

D.2 Transmission gains and associated equivalent satellite link noise temperatures

For each entry under D.1:

a) The lowest equivalent satellite link noise temperature and the associated transmission gain. These values shall be indicated for the nominal value of the angle of elevation. The transmission gain is evaluated from the output of the receiving antenna of the space station to the output of the receiving antenna of the earth station.

b) The values of transmission gain and associated equivalent satellite link noise temperature that correspond to the highest ratio of transmission gain to equivalent satellite link noise temperature.

ANNEX 2B (to Appendix S4)

Table of characteristics to be submitted for space and radio astronomy services

A. General characteristics of the satellite network or the earth station

Items in Appendix	Advanced publication of a geostationary-satellite network	Advanced publication of a non-geostationary-satellite network	Notification or coordination of a GSO network (including Appendix S30B)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of *an earth station*	Notice for space stations *in the BSS* under Appendix S30	Notice for feeder-link stations under Appendix S30A	Notice for stations in the FSS under Appendix S30B	Items in Appendix	Radio Astronomy
A.1.a	X	X	X	X		X	X	X	A.1.a	
A.1.b						X			A.1.b	
A.1.c							X		A.1.c	
A.1.d								X	A.1.d	
A.1.e.1					X				A.1.e.1	
A.1.e.2					X				A.1.e.2	X
A.1.e.3					X				A.1.e.3	
A.1.e.4									A.1.e.4	X
A.1.f	X	X	X	X	X	X	X	X	A.1.f	X
A.2.a	X	X	X	X	X	X	X	X	A.2.a	
A.2.b	X		X						A.2.b	
A.2.c									A.2.c	X
A.3	X	X	X	X	X	X	X		A.3	X
A.4.a.1	X		X			X	X	X	A.4.a.1	
A.4.a.2	X		X			X	X		A.4.a.2	
A.4.a.3	X		X						A.4.a.3	
A.4.a.4	X		X						A.4.a.4	
A.4.a.5	X		X						A.4.a.5	
A.4.b		X		X					A.4.b	
A.4.c					X				A.4.c	
A.5			X	X	X	X	X	X	A.5	
A.6			X	X	X	X	X	X	A.6	
A.7.a					X		X		A.7.a	
A.7.b					X		X		A.7.b	
A.7.c					X				A.7.c	
A.7.d					X		X		A.7.d	
A.8						X			A.8	
A.9						X			A.9	
A.10					X				A.10	
A.11						X	X		A.11	
A.12							X		A.12	

Legend: X - mandatory information O - optional information C - *This information need only be furnished when it has been used as a basis to effect coordination with another administration*

B. Characteristics to be provided for each satellite antenna beam and for each earth station antenna

Items in Appendix	Advanced publication of a geostationary-satellite network	Advanced publication of a non-GSO network	Notification or coordination of a GSO network (including Appendix S30B)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station	Notice for space stations in the BSS under Appendix S30	Notice for feeder-link stations under Appendix S30A	Notice for stations in the FSS under Appendix S30B	Items in Appendix	Radio Astronomy
B.1	X	X	X	X	X	X	X	X	B.1	
B.2	X	X	X	X	X			X	B.2	
B.3.a	X		X						B.3.a	
B.3.b.1	X		X						B.3.b.1	
B.3.b.2	X		X						B.3.b.2	
B.3.c	O		C						B.3.c	
B.3.d	O		X			X	X	X	B.3.d	
B.3.e	X		X						B.3.e	
B.3.f	X		X				X		B.3.f	
B.3.g.1						X	X	X	B.3.g.1	
B.3.g.2						X	X	X	B.3.g.2	
B.3.g.3						X	X	X[9]	B.3.g.3	
B.3.g.4						X	X	X[9]	B.3.g.4	
B.3.g.5						X	X	X[9]	B.3.g.5	
B.3.g.5bis							X		B.3.g.5bis	
B.3.g.6						X			B.3.g.6	
B.4.a		X		X					B.4.a	
B.4.b		X		X					B.4.b	
B.5.a					X				B.5.a	
B.5.b					X				B.5.b	
B.5.c					X				B.5.c	
B.6									B.6	X

Legend: X - mandatory information O - optional information C - This information need only be furnished when it has been used as a basis to effect coordination with another administration

9 Only information on co-polar antenna characteristics is required

C. Characteristics to be provided for each group of frequency assignments for a satellite antenna beam or an earth station antenna

Items in Appendix	Advanced publication of a geostationary-satellite network	Advanced publication of a non-geostationary-satellite network	Notification or coordination of a geostationary-satellite network (including Appendix S30B)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station	Notice for space stations in the BSS under Appendix S30	Notice for feeder-link stations under Appendix S30A	Notice for stations in the FSS under Appendix S30B	Items in Appendix	Radio Astronomy
C.1	X	X						X	C.1	
C.2.a			X	X	X	X	X		C.2.a	
C.2.b									C.2.b	X
C.3.a			X	X	X		X		C.3.a	
C.3.b									C.3.b	X
C.4	X	X	X	X	X	X	X		C.4	X
C.5.a	X	X	X	X			X	X	C.5.a	
C.5.b					X				C.5.b	
C.5.c									C.5.c	X
C.6	X	X	X	X	X	X	X		C.6	
C.7.a	O	O	X	X	X	X	X		C.7.a	
C.7.b	O	O	C	C	C				C.7.b	
C.7.c	O	O	C	C	C				C.7.c	
C.7.d	O	O	C	C	C				C.7.d	
C.8.a	X[1,7]	X[1,7]	X[7]	X[7]	C[8]				C.8.a	
C.8.b	X[1,7]	X[1,7]	X[7]	X[7]	X				C.8.b	
C.8.c	O	O	X[6]	X[6]	X[6]				C.8.c	
C.8.d			X[2]	X[2]					C.8.d	
C.8.e	O	O	X[6]	X[6]	X[6]				C.8.e	
C.8.f	X[3]	X[3]							C.8.f	
C.8.g			C[4]	C[4]	C[4,5]				C.8.g	
C.8.h						X			C.8.h	
C.8.i							X		C.8.i	
C.8.j								X	C.8.j	

Legend: X - mandatory information O - optional information C - This information need only be furnished when it has been used as a basis to effect coordination with another administration

Notes: 1 Only the value of maximum power density is mandatory
2 For transmission from the space station only
3 For space-to-space relay only
4 For transmission from the earth station only
5 Not required for coordination under No. S9.15, S9.17 or S9.17bis
6 Required, if applicable, for the type of transmission. If not applicable, a reason why it is not applicable is required
7 One or the other of C.8.a or C.8.b is mandatory, but not both
8 Only the value of total peak envelope power is required for coordination under No. S9.15, S9.17 or S9.17bis

C. Characteristics to be provided for each group of frequency assignments for a satellite antenna beam or an earth station antenna (continued)

Items in Appendix	Advanced publication of a geostationary-satellite network	Advanced publication of a non-geostationary-satellite network	Notification or coordination of a geostationary-satellite network (including Appendix S30B)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station	Notice for space stations in the BSS under Appendix S30	Notice for feeder-link stations under Appendix S30A	Notice for stations in the FSS under Appendix S30B	Items in Appendix	Radio-astronomy
C.9.a	O	O	C	C					C.9.a	
C.9.b						X	X		C.9.b	
C.9.c		X		X					C.9.c	
C.10.a	X	X	X	X					C.10.a	
C.10.b	X	X	X	X			X		C.10.b	
C.10.c.1	X	X	X	X			X	X	C.10.c.1	
C.10.c.2	X	X	X	X			X	X	C.10.c.2	
C.10.c.3	O	O	X	X			X	X	C.10.c.3	
C.10.c.4	X	X	X	X			X	X	C.10.c.4	
C.10.c.5	X	X	X	X				X	C.10.c.5	
C.10.c.6							X		C.10.c.6	
C.11.a	X	X	X	X					C.11.a	
C.11.b							X		C.11.b	
C.11.c						X		X	C.11.c	
C.11.d		X		X					C.11.d	
C.12								X	C.12	
C.13									C.13	X
C.14						X			C.14	

Legend: X - mandatory information O - optional information C - This information need only be furnished when it has been used as a basis to effect coordination with another administration

D. Overall Link Characteristics

Items in Appendix	Advanced publication of a geostationary-satellite network	Advanced publication of a non-geostationary-satellite network	Notification or coordination of a geostationary-satellite network (including Appendix S30B)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station	Notice for space stations in the BSS under Appendix S30	Notice for feeder-link stations under Appendix S30A	Notice for stations in the FSS under Appendix S30B	Items in Appendix	Radio-astronomy
D.1	X		X						D.1	
D.2.a	X		X						D.2.a	
D.2.b	X		X						D.2.b	

Legend: X - mandatory information O - optional information C - *This information need only be furnished when it has been used as a basis to effect coordination with another administration*

APPENDIX S5

MOD

Identification of Administrations with Which Coordination Is to Be Effected or Agreement Sought Under the Provisions of Article S9

MOD

1 For the purpose of effecting coordination under Article **S9**, except in the case under No. **S9.21**, and for identifying the administrations with which coordination is to be effected, the frequency assignments to be taken into account are those in the same frequency band as the planned assignment, pertaining to the same service or to another service to which the band is allocated with equal rights or a higher category[1] of allocation, which might affect or be affected, as appropriate, and which are:

MOD

[1] The coordination between an earth station and terrestrial stations under Nos. **S9.15**, **S9.16**, **S9.17**, **S9.18** and **S9.19**, or between earth stations operating in opposite directions of transmission under **S9.17bis**, applies only to assignments in bands allocated with equal rights.

MOD

a) in conformity with No. **S11.31**[2]; and

ADD

[2] For the purpose of effecting coordination, an assignment for which the process of obtaining agreement under No. **S9.21** has been initiated is considered to be in conformity with No. **S11.31** with respect to No. **S9.21.**

MOD

b) either recorded in the Master Register with a favourable finding with respect to No. **S11.32**; or

ADD

c) recorded in the Master Register with an unfavourable finding with respect to No. **S11.32** and a favourable finding with respect to No. **S11.32bis** or No. **S11.33**, as appropriate; or

ADD

d) coordinated under the provisions of Article **S9**; or

MOD

e) included in the coordination procedure with effect from the date of receipt[3] by the Bureau, in accordance with No. **S9.34**, of the basic characteristics as specified in Appendix **S4**; or

MOD

f) for terrestrial radiocommunication stations or earth stations operating in the opposite direction of transmission[4], operating in accordance with these Regulations, or to be so operated prior to the date of bringing the earth station assignment into service, or within the next three years from the date of dispatch of coordination data under No. **S9.29**, whichever is the longer, or from the date of the publication referred to in No. **S9.38**, as appropriate.

ADD

[3] See No. **S9.1** concerning the date to be considered as the date of receipt by the Bureau of the information relating to the coordination of a satellite network or the notification of a frequency assignment.

ADD

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[4] The associated space network characteristics must have been communicated to the Bureau under No. **S9.2ter**.

ADD

2 For the application of No. **S9.21**, the agreement of an administration may be required with respect to the frequency assignments in the same frequency band as the planned assignment, pertaining to the same service or to another service to which the band is allocated with equal rights or a higher category of allocation, which may be affected, and:

a) in cases involving a space radiocommunication station with respect to another space radiocommunication station:

i) which are in conformity with No. **S11.31**, and

- are recorded in the Master Register, or
- are notified to the Bureau, or
- for which information under No. **S9.34** has been received by the Bureau; or

ii) for which the procedure under No. **S9.21** has been initiated; or

b) for terrestrial radiocommunication stations operating in accordance with these Regulations, or to be so operated prior to the date of bringing the earth station assignment into service, or within the next three years, whichever is the longer; or

c) for terrestrial radiocommunication stations operating in accordance with these Regulations, or to be so operated prior to the date of bringing the other terrestrial station assignment into service, or within the next three months, whichever is the longer;

MOD 3 For each of the frequency assignments to an individual station or to a satellite network mentioned in paragraphs 1 and 2 above, the level of interference shall be determined using the method referred to in Table **S5-1** which is appropriate to the particular case.

MOD 4 The assignment is considered to cause or suffer interference, as appropriate, and coordination must be sought under the procedure of Article **S9**, if:

NOC a) the interference level exceeds the threshold level given in Table **S5-1**; or

MOD b) the condition specified in Table **S5-1** is applicable.

ADD 5 Threshold values to determine whether coordination under No. **S9.11bis** is required are given in Table **S5-2**.

MOD 6 No coordination is required:

a) when the use of a new frequency assignment will not cause or suffer, as appropriate, in respect of any service of another administration, an increase in the level of interference above the threshold calculated in accordance with the method referred to in Table **S5-1**; or

MOD b) when the characteristics of a new or a modified frequency assignment or a new earth station are within the limits of those of a frequency assignment which has previously been coordinated; or

MOD c) to change the characteristics of an existing assignment in such a way as not to increase the interference to or from, as appropriate, the assignments of other administrations; or

NOC d) for assignments to stations comprising a satellite network in relation to assignments of other satellite networks:

(MOD) i) for a new frequency assignment to a receiving station, when the notifying administration states that it accepts the interference resulting from the frequency assignments referred to in No. **S9.27**; or

(MOD) ii) between earth stations using frequency assignments in the same direction (either Earth-to-space or space-to-Earth); or

MOD e) for assignments to earth stations in relation to terrestrial stations or earth stations operating in the opposite direction of transmission, when an administration proposes:

NOC i) to bring into use an earth station the coordination area of which does not include any of the territory of any other country;

NOC ii) to operate a mobile earth station. However, if the coordination area associated with the operation of such a mobile earth station includes any of the territory of another country, the operation of such a station shall be subject to agreement on coordination between the administrations concerned. This agreement shall apply to the characteristics of the mobile earth station(s), or to the characteristics of a typical mobile earth station, and shall apply to a specified service area. Unless otherwise stipulated in the agreement, it shall apply to any mobile earth stations in the specified service area provided that interference caused by them shall not be greater than that caused by a typical earth station for which the technical characteristics appear in the notice and have been or are being submitted in accordance with Section I of Article **S11**; or

MOD iii) to bring into use a new frequency assignment to a receiving earth station and the notifying administration states that it accepts the interference resulting from existing and future terrestrial station assignments or assignments to earth stations operating in the opposite direction of transmission. In such case, administrations responsible for the terrestrial stations or earth stations operating in the opposite direction of transmission are not required to apply the provisions of No. **S9.18** or No. **S9.17bis** of Article **S9** respectively:

MOD f) to bring into use an assignment to a terrestrial station or an earth station operating in the opposite direction of transmission which is located, in relation to an earth station, outside the coordination area of that earth station; or

MOD g) to bring into use an assignment to a terrestrial station or an earth station operating in the opposite direction of transmission within the coordination area of an earth station, provided that the proposed assignment to a terrestrial station or an earth station operating in the opposite direction of transmission is outside any part of a frequency band coordinated for reception by that earth station.

MOD

TABLE **S5-1**

SUP Footnote 1.

Technical conditions for coordination
(see Article **S9**)

	Reference of Article S9	Case	Frequency bands	Threshold/Condition	Calculation method	Remarks
MOD	No. **S9.7** GSO/GSO	A station in a satellite network using the geostationary-satellite orbit in respect of any other satellite network using that orbit	Any frequency band allocated to a space service, except those mentioned in the plans of Appendices **S30**, **S30A** and **S30B**	Value of $\Delta T/T$ exceeds 6%	Appendix **S8**	
MOD	No. **S9.8** GSO/GSO	A transmitting space station of the fixed-satellite service (FSS) using the geostationary-satellite orbit in a frequency band shared with the BSS on an equal primary basis, in respect of space stations of the latter service which are subject to the plan in Appendix **S30**	11.7 - 12.2 GHz (R2) 12.2 - 12.7 GHz (R3) 12.5 - 12.7 GHz (R1)	i) There is an overlap in the necessary bandwidths of the space stations of FSS and BSS; and ii) the powerflux-density (pfd) of the space station of the FSS exceeds the value given in Annex 4 of Appendix **S30** on the territory of another administration located in another region.	Check by using the assigned frequencies and bandwidths;	See also Article 7 of Appendix **S30**. The application of these provisions with respect to the bands and services of Articles **6** and **7** of Appendices **30** and **30A** is suspended pending the decision of WRC-97 on revision of Appendices **30** and **30A**.

(CONTINUED)

	Reference of Article S9	Case	Frequency bands	Threshold/Condition	Calculation method	Remarks
MOD	No. **S9.9** GSO/GSO	A station of the FSS in a frequency band shared on an equal primary basis with the feeder links of the BSS, which are subject to the plan in Appendix **S30A**	17.7 - 18.1 GHz (R1) 17.7 - 18.1 GHz (R3) 17.7 - 17.8 GHz (R2)	i) Value of $\Delta T_s/T_s$ exceeds 4% (see Section 1 of Annex 4 of Appendix **S30A**); and ii) geocentric inter-satellite angular separation is less than 3° or greater than 150°	i) Case II of Appendix **S8** ii) Annex I of Appendix **S8**	The threshold/ conditions do not apply when the geocentric angular separation, between a transmitting space station in the fixed-satellite service and a receiving space station in the feeder-link Plan, exceeds 150° of arc and the free-space power flux-density of the transmitting space station in the fixed-satellite service does not exceed a value of -137 dB(W/m^2/MHz) on the surface of the Earth at the equatorial limb. The application of these provisions with respect to the bands and services of Articles **6** and **7** of Appendices **30** and **30A** is suspended pending the decison of WRC-97 on revision of Appendices **30** and **30A**.

(CONTINUED)

	Reference of Article S9	Case	Frequency bands	Threshold/Condition	Calculation method	Remarks
MOD	No. **S9.11** GSO/terrestrial	A space station in the BSS, in any band shared on an equal primary basis with terrestrial services and in which there is no plan for the BSS, in respect of terrestrial services	620 - 790 MHz 1 452 - 1 492 MHz 2 310 - 2 360 MHz 2 520 - 2 655 MHz 2 655 - 2 670 MHz 12.5 - 12.75 GHz (R3) 17.3 - 17.8 GHz (R2) 21.4 - 22 GHz (R1, R3) 40.5 - 42.5 GHz 84 - 86 GHz	Condition: Bandwidths overlap	Check by using the assigned frequencies and bandwidths	
MOD	No. **S9.12** 1) Non-GSO/ Non-GSO	A station in a satellite network using a non-geostationary-satellite orbit in the frequency bands for which a footnote refers to **S9.11bis** in respect of any other satellite network using a non-geostationary-satellite orbit	See Table **S5-1A**	Condition: Bandwidths overlap	Check by using the assigned frequencies and bandwidths	

(CONTINUED)

	Reference of Article S9	Case	Frequency bands	Threshold/Condition	Calculation method	Remarks
MOD	No. **S9.12** 2) Non-GSO/GSO	A station in a satellite network using a non-geostationary-satellite orbit in the frequency bands for which a footnote refers to **S9.11bis** in respect of any other satellite network using the geostationary-satellite orbit	See Table **S5-1A**	Condition: **Bandwidths overlap**	Check by using the assigned frequencies and bandwidths	
MOD	No. **S9.13** GSO/Non-GSO	A station in a satellite network using the geostationary-satellite orbit in the frequency bands for which a footnote refers to **S9.11bis** in respect of any other satellite network using a non-geostationary-satellite orbit	See Table **S5-1A**	Condition: **Bandwidths overlap**	Check by using the assigned frequencies and bandwidths	

(CONTINUED)

	Reference of Article S9	Case	Frequency bands	Threshold/Condition	Calculation method	Remarks
MOD	No. **S9.14** Non-GSO/ terrestrial, GSO/terrestrial	For a space station in a satellite network in the frequency bands for which a footnote refers to **S9.11bis** in respect of stations of terrestrial services where thethreshold(s) is (are) exceeded	See Table **S5-1A**	For a non-GSO space station: See Table **S5-2**	See Table **S5-2**	
MOD	No. **S9.15** non-GSO/ terrestrial	A specific earth station or a typical earth station in respect of terrestrial stations in frequency bands for which a footnote refers to **S9.11bis** allocated with equal rights to space and terrestrial services, where the coordination area of the earth station includes the territory of another country	See Table **S5-1A**	The coordination area of the earth station covers the territory of another administration	[See Doc. 189]	
MOD						

(CONTINUED)

	Reference of Article S9	Case	Frequency bands	Threshold/Condition	Calculation method	Remarks
MOD	No. **S9.16** terrestrial/ non-GSO	A transmitting station of a terrestrial service within the coordination area of an earth station in a non-geostationary-satellite network in frequency bands for which a footnote refers to **S9.11bis**	See Table **S5-1A**	Transmitting terrestrial station is situated within the coordination area of a receiving earth station which has already been coordinated		The coordination area of the affected earth station has already been determined using the calculation method of No. **S9.15**
MOD	No. **S9.17** GSO, non-GSO/ terrestrial	A specific earth station or a typical mobile earth station in frequency bands above 1 GHz allocated with equal rights to space and terrestrial services in relation to terrestrial stations, where the coordination area of the earth station includes the territory of another country	Any frequency band allocated to a space service, except those mentioned in the plans of Appendix **S30**	The coordination area of the earth station covers the territory of another administration	Appendix **S7** (For earth stations in the radiodetermination-satellite service (RDSS) in the bands 1 610 - 1 626.5, 2 483.5 - 2 500 and 2 500 - 2 516.5 MHz, see Remarks column) 1) The coordination area of aircraft earth stations is determined by increasing the service area by 1 000 km with respect to the aeronautical mobile service (terrestrial) or 500 km with respect to terrestrial services other than the aeronautical mobile service	<u>Note</u>: For RDSS earth stations, a uniform coordination distance of 400 km corresponding to an airborne earth station shall be used. In cases where the earth stations are all ground-based, a coordination distance of 100 km shall be used. The application of these provisions with respect to the bands and services of Articles **6** and **7** of Appendix **30A** is suspended pending the decision of WRC-97 on revision of Appendix **30A**.